

# Turf Diseases and Other Landscape Problems

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# Overview

- Necrotic ring spot
- Summer patch
- Snow mold
- Other turf diseases, slime mold and algae
- Other problems with landscape plants

# Necrotic ring spot

- Caused by *Ophiosphaerella korrae*
- Mainly attacks *Poa pratensis* (Kentucky bluegrass), occasionally *Poa annua* (annual blugrass), *Festuca rubra* (red fescue)



Mary Ann Hansen, Virginia Polytechnic Institute and State University, Bugwood.org



Howard Schwartz, Colorado State University, Bugwood.org

# Necrotic ring spot

- Symptoms:
  - Circular patches develop during cool wet weather that gradually enlarge to about 12 in in diameter
  - During drought the spot can get as big as 2-3 ft.
  - Occurs throughout the growing season
  - No spot or lesions on leaves
  - Blackening of roots and stem
  - Occasionally black fruiting bodies are found on infected tissue
  - Roots are rotten



# Necrotic ring spot

- **Management**

- Avoid drought stress. During hot weather light daily irrigation necessary to reduce heat stress.
- Maintain balanced and adequate fertility, especially nitrogen, potassium and phosphorus
- Slow-release fertilizer or organic fertilizer better than quick-release fertilizer (water-soluble)

# Necrotic ring spot

- Management (cont.)
  - Overseeding with *Lolium perenne* (perennial ryegrass) or more resistant cultivars of *P. pratensis*  
([http://www.ntep.org/data/kb05/kb05\\_11-9/kb0511t26.txt](http://www.ntep.org/data/kb05/kb05_11-9/kb0511t26.txt))
  - Fungicides applied in early-mid spring as a preventative can reduce incidence and severity
    - Heritage                      Insignia
    - Banner MAXX              Headway\*
    - Iprodione Pro 2SE                      \* contains azoxystrobin and propiconazole

# Summer patch

- Caused by *Magnaporthe poae*
- Mainly attacks *Poa pratensis* (Kentucky bluegrass) and fine-leaf fescue



Mary Ann Hansen, Virginia Polytechnic Institute and State University, Bugwood.org

# Summer patch

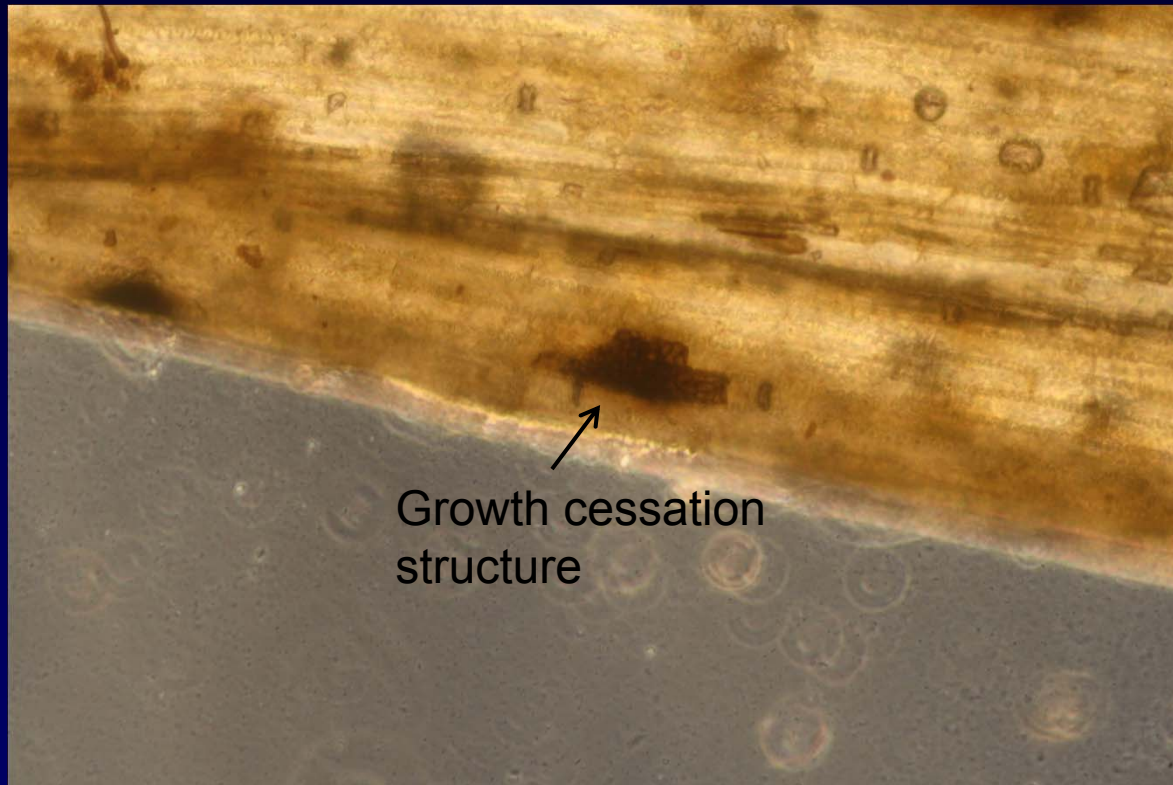
- **Symptoms**

- Very similar to necrotic ring spot
- Spot of summer patch usually a little smaller than necrotic ring spot
- During extended hot weather (day time temp. 82-95, night time temp above 68F), infected plants die fast
- Occurs from late spring to early fall but infected patches can still be seen next season



# Summer patch identification

- Growth cessation structures in roots and shoots
- Fruiting bodies with spores



# Summer patch

- **Management**

- Avoid stress.
- Use slow-release fertilizer (for example sulfur-coated urea) or acidifying fertilizer in cool dry weather and irrigate immediately to prevent foliar burns
- Overseeding with *Lolium perenne* or resistant *P. pratensis*

([http://www.ntep.org/data/kb05/kb05\\_11-9/kb0511t25.txt](http://www.ntep.org/data/kb05/kb05_11-9/kb0511t25.txt))

# Summer patch

- **Management**
  - Same fungicides can be applied that are used for necrotic ring spot

# Snow mold (pink and gray)

- Pink snow mold caused by *Microdochium nivale*
- Gray snow mold caused by *Typhula* sp.



pink

gray



William Brown, Colorado State University, Bugwood.org

William Brown, Colorado State University, Bugwood.org

# Gray snow mold

- Symptoms:
  - Circular patches visible after snow melt
  - Size of spots ranges from 1in. to 2-3 ft.
  - Leaves are matted and often white to gray mycelium is visible (disappears after desiccation)
  - Usually only leaves get infected. Plants re-grow as soon as it warms up
  - Sclerotia (fungal survival structure) can be seen on grass

[http://goglobalturf.org/en/index.php?title=Typhula\\_Blight](http://goglobalturf.org/en/index.php?title=Typhula_Blight)



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# Gray snow mold

- **Management:**

- Avoid heavy nitrogen fertilizer in late fall
- Fertilizer should be applied a few weeks prior to dormancy
- Mow until late fall to avoid snow falling on tall grass
- Avoid compaction of snow by skis etc and large snow drifts
- Fungicides can be used as preventative in fall, not useful as curative

- Heritage
- Iprodione Pro 2SE
- Banner MAXX



[http://goglobalturf.org/en/index.php?title=Tophula\\_Blight](http://goglobalturf.org/en/index.php?title=Tophula_Blight)



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# Pink snow mold

- **Symptoms:**
  - Circular patches develop with long periods of cool, wet weather regardless of snow cover
  - Initial spot size less than 2 in. but can enlarge indefinitely
  - White to gray mycelium is sometimes visible (disappears after desiccation)
  - Exposure to light leads to spore production. Spores look pink in masses

<http://www.pitchcare.com/magazine/how-to-diagnose-a-disease-problem.html>



ais.ncsu.edu

# Pink snow mold

- **Management:**
  - Same as for gray snow mold
  - Additionally:
    - Maintain low soil pH
    - Maintain balanced fertilizer program



# Rust

- Fungal pathogens (several species cause the disease)
- Name comes from the orange colored spores
- Grass stressed by environmental conditions is more susceptible.
- Resistance varies among turf varieties
- Spores are dispersed through air, mowing, shoes, animals

# Rust



<http://www.flickr.com/photos/biresch/3103228256/>



K. Mathias, U of MD

# Rust

- Rust fungi produce several types of spores
  - Urediniospores – rust colored, for widespread dispersal
  - Teliospores – dark brown or black, for survival in the winter but for grass rust these spores are not important
- Urediniospores survive the winter in milder climates and then are blown long distances to colder regions

# Rust

- **Management:**

- Fertilize and irrigate as needed to avoid stress
- Irrigate in the morning so the grass is dry overnight
- Mow frequently to remove new infection early but do not mow below the recommended height and remove clippings
- Prune trees to increase light in heavily shaded areas and increase air movement to reduce humidity
- Fungicides like Heritage and Insignia

# ***Bipolaris, Drechslera* and their relatives**

- Cause leaf spots
- *Bipolaris* sp. active in cool-season grasses during warm, wet weather (68-90F)
- *Drechslera* sp. active from 59-64F and is not active above 80F
- They can also cause root rot and attack rhizomes

# *Bipolaris, Drechslera* and their relatives



<http://www.ars.usda.gov/Research/docs.htm?docid=8909>

Bipolaris leaf spot symptom



Drechslera spores

[http://bucketurf.osu.edu/index.php?option=com\\_content&view=article&id=934:summer-diseases-hit-many-turf-areas&catid=1:latest-news&Itemid=170](http://bucketurf.osu.edu/index.php?option=com_content&view=article&id=934:summer-diseases-hit-many-turf-areas&catid=1:latest-news&Itemid=170)

Bipolaris spores



[http://turf-diseases.blogspot.com/2010\\_06\\_01\\_archive.html](http://turf-diseases.blogspot.com/2010_06_01_archive.html)

# ***Bipolaris, Drechslera and their relatives***

- **Management:**
  - Avoid fertilizer applications that cause excessive growth in spring and midsummer
  - Water deeply in the morning
  - Reduce thatch layer to no more than 0.5 inch
  - Plant resistant varieties
  - Fungicides: Heritage, Insignia, Iprodione
  - Avoid shade

# ***Bipolaris, Drechslera* and their relatives**

- *Curvularia* sp.
  - Weak pathogen
  - Attacks already stressed grass
  - Most active during high temperatures or drought stress
  - Survives in organic debris (thatch)
  - Management of *Curvularia* is the same as for *Bipolaris* and *Drechslera*



# Fairy rings

- **Symptoms and signs:**
  - Three types of symptoms:
    - Type I: Soil and thatch become hydrophobic and the grass dies → brown ring of dead grass
    - Type II: Rings on the lawn that are 2-8 in. wide which lush green grass
    - Type III: Mushrooms and puffballs are produced in the ring
    - White fungal mycelium can be found in thatch
- **Causal agents:**
  - A variety of different mushrooms such as *Marasmius*, *Agaricus*, *Calvatia*, *Lepiota* or *Tricholoma*

# Fairy rings





[http://www.aphotofungi.com/agaricales\\_marasmius\\_oreades\\_fairy\\_ring\\_champignon.html](http://www.aphotofungi.com/agaricales_marasmius_oreades_fairy_ring_champignon.html)

Marasmius sp.



© 2006 Martha Edley

Lepiota



Michael Kuo

Agaricus sp.



<http://www.mykoweb.com/TFWNA/P-53.html>

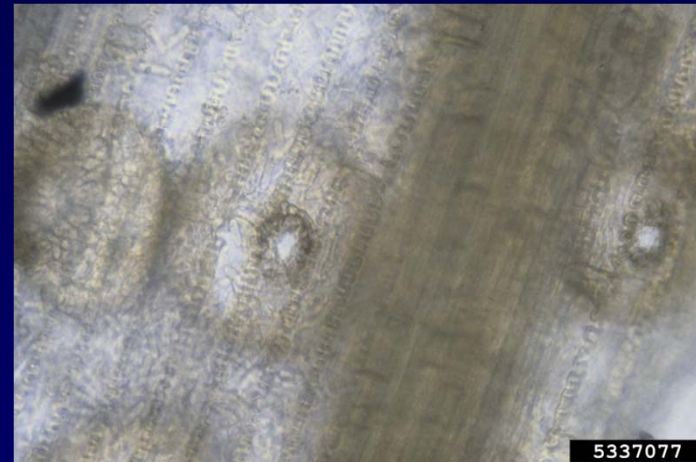
# Fairy rings

- **Management:**
  - Reduce thatch
  - Deep watering to stimulate growth of grass around ring to mask fairy ring
  - May need a wetting agent
  - Control with fungicide drenches is inconsistent
  - Other management option very expensive
    - Soil replacement: Remove soil about 20 in. to each side of the ring and up to 30 in. deep and replace with sterile soil

# *Ascochyta* leaf blight

- Symptoms:
  - Leaves die back from the tip resulting in brown patches of grass
  - Does not cause permanent damage
  - Looks similar to *Drechslera* and *Bipolaris* symptoms
  - Symptoms can occur at any time but are more commonly seen during hot dry weather
  - Top third of leaf blade dies back and the area between diseased and healthy tissue is slightly constricted

# *Ascochyta* leaf blight



Mary Ann Hansen, Virginia Polytechnic Institute and State University, Bugwood.org

# *Ascochyta* leaf blight

- **Management:**
  - Reduce thatch
  - Improve water penetration by aerification
  - Maintain sharp mower blades to reduce wounding of grass; reduce mowing frequency during an outbreak
  - Balanced fertilizer program; avoid excessive nitrogen especially in the spring
  - Avoid drought stress as well as excessive irrigation

# Slime mold

- They are not pathogens
- Fruiting structures form under moist conditions on plant surfaces
- Spores will disperse and fruiting structures disappear





# Cyanobacteria\Blue-green algae

- They are not true pathogens
- Problem in areas that are heavily shaded, have poor drainage and high levels of phosphorus
- In large number they move up on grass blades or cover the ground
- Release of toxins causes grass to turn yellow and sometimes die
- Black layer on thatch or thinned grass

# Cyanobacteria\Blue-green algae



<http://www.flickr.com/photos/25486599@N07/2401503604/sizes/z/in/photostream/>



<http://www.flickr.com/photos/25486599@N07/2401285296/sizes/z/in/photostream/>

# Cyanobacteria\Blue-green algae

- Management:
  - Fungicides: Chlorothalonil products (Daconil) three times at 7 day intervals
    - Note: QoI fungicides such as Heritage and Insignia could increase problem
  - Aerating compacted areas to increase water infiltration

# Algae



- Problem in thin grass, shaded areas, over watered and overfertilized areas



# General management practices to reduce disease

- Reduce thatch
  - Many fungal pathogens like to stay in the thatch
  - High humidity, lots of food (dead grass)
- Do not mow grass below recommended heights
- Avoid drought stress

# Information and Resources

- National Turfgrass Evaluation Program  
(<http://www.ntep.org/contents2.shtml>)
- Diagnosis of disease problems
  - Utah Plant Pest Diagnostic Lab  
Utah State University  
5305 Old Main Hill  
Logan, UT 84322

# Other landscape problems

# Downy mildew of Impatiens

- First observed in Utah in 2012
- Fungal-like organism specific to impatiens
- Spores are spread by wind and water
- Pathogen survives in plant debris
- Symptoms
  - Leaves may be slightly yellow
  - Leaves fall off, leaving just stems





# Downy mildew



<http://palmbeachcountyextension.wordpress.com/2012/02/10/managing-downy-mildew-on-impatiens-workshop/>

Downy mildew  
of Impatiens



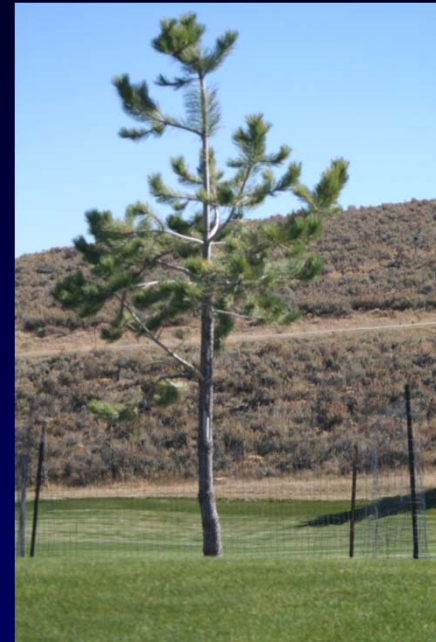


<http://hyg.ipm.illinois.edu/article.php?id=354>

# Downy mildew - Management

- Remove all infected plant material
- Do not compost infected plant material
- Plant other ornamentals in the location for at least a couple of years
- Fungicides as protectant
  - Heritage, Stature, Presidio
  - Subdue Maxx, Fenstop
  - They do not always work due to resistance problems

# Porcupine 'canker'



# Damage from lawnmower



Damage from lawnmowers provides entrance points for wood decay fungi



# Thousand cankers disease

- Black and English walnut trees are killed
- Fungus transmitted by walnut twig beetle
- Beetle is the size of grain of rice. It bores into the trunk of trees. The fungus kills the tissue surrounding the bore holes.
- It is the high number of small cankers that kill the tree within 3-4 years after infection

# Thousand cankers



[www.agnr.umd.edu](http://www.agnr.umd.edu)



# Management – Canker

- Look for dead, dying or wilting branches
- Look for discolored bark
- Prune out infected branches and limbs